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DEPARTMENT OF THE INTERIOR
UNITED STATES RECLAMATION SERVICE

Bureau of

REGULATIONS

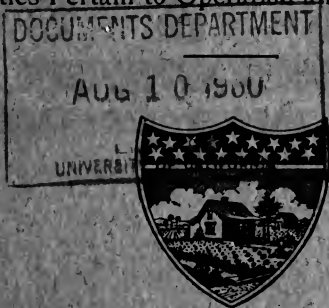
GOVERNING OPERATION AND MAINTENANCE
OF IRRIGATION WORKS

STATE OF WASHINGTON

APPROVED BY
THE SECRETARY OF THE INTERIOR
APRIL 24, 1911

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Instructions for Water Users and for Employees whose
Duties Pertain to Operation and Maintenance



1911

DEPARTMENT OF THE INTERIOR
UNITED STATES RECLAMATION SERVICE

Bureau 7

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DEPARTMENT OF THE INTERIOR
UNITED STATES RECLAMATION SERVICE

WASHINGTON, D. C., April 24, 1911.

REGULATIONS GOVERNING OPERATION AND
MAINTENANCE OF IRRIGATION WORKS, FOR
PROJECTS IN THE STATE OF WASHINGTON

1. The Reclamation Service will operate and maintain the reservoirs, diversion works, canals, laterals and sublaterals having a capacity of ten (10) second-feet or more and the cost of their operation and maintenance will be included in the operation and maintenance charges of the project. All canals, laterals and sublaterals of less than ten (10) second-feet capacity, as designated by the Reclamation Service, shall be operated and maintained and the cost of their operation and maintenance paid by the water users directly, but the Reclamation Service will exercise general supervision over all operations.

2. Only those water users who have paid the operation and maintenance charges for the current and previous years are entitled to the use of water. Delivery of water will be made only on request in writing, and when in progress will be continuous, day and night. Request blanks will be furnished, and boxes in which the requests for water may be deposited will be placed at headgates. Requests for delivery, changing rate of delivery, or ending delivery of water shall be made at least 36 hours in advance. All deliveries of water will be under the control of the United States and change in the supply delivered on portions of the system operated by the Reclamation Service shall under no circumstances be made by any person other than an officer of the Reclamation Service. On canal divisions,

change in supply delivered shall be made only by an officer of the Reclamation Service or by the division ditch tender. This rule is necessary for the safeguarding of the canal system and anyone who violates it will be vigorously prosecuted under the state law applicable thereto. Delivery of water will not be made through any portion of the distribution system not properly cleaned or which, from any cause, is not in serviceable condition. Delivery of the amount of water to which each canal division is entitled will be made at the head of such canal division by the Reclamation Service, and no change in amount so delivered shall be made by any person other than an officer of the Reclamation Service.

3. Canal divisions as provided for in article 7, section 4, of the by-laws of the water users' association must be organized for the operation and maintenance of such portions of the distribution system as are not maintained by the Reclamation Service, and upon the execution of a proper agreement between the water users' association and the Secretary of the Interior, these canal divisions may include portions of the distribution system now operated and maintained by the Reclamation Service. The boundaries of all canal divisions must be approved by the project engineer. Such portions of the distribution system as are included in canal divisions must be operated and maintained in accordance with instructions, rules and regulations for operation and maintenance issued by the Reclamation Service from time to time.

4. All works constructed or acquired by the Reclamation Service are the property of the United States and must be respected accordingly. No structure, fence, bridge, or obstruction of any kind shall be placed upon the right of way or other property of the United States, except upon written agreement with or license from the official in charge of the project, subject to the approval of the proper officer of the Reclamation Service.

5. Rights of way over public lands entered subsequent to October 2, 1888, are reserved to the United States by the acts of Congress approved August 30, 1890, and March 3, 1891. Over such lands the width of the right of way will be that which is required to provide for satisfactory operation and maintenance of the canal or lateral.

6. Beneficial use of water is the basis of all Government water rights and the wasteful use of water is prohibited. Each water user is responsible for drainage water from his lands and must, at his own expense, provide all necessary drains therefor.

7. The Reclamation Service is not obligated to furnish water for any other purpose than for irrigation.

8. In general, the number of deliveries or measuring boxes installed will be as small as possible on that portion of the distribution system operated by the United States. On lands having a Government water right, one delivery to each farm unit or Government subdivision of forty acres will be the unit adopted. On lands having water rights from old canal companies and receiving water through Reclamation works, not more than one delivery for each original contract will be the basis. Additional measuring boxes will be installed only when approved in writing by the project engineer and they will not be installed simply to avoid the expenditure by the landowner of a reasonable sum in fluming or piping the water across depressions, or because of the subdivision of units noted above into smaller tracts under different ownership.

9. No one but an authorized agent or officer of the Reclamation Service shall operate, either to open or close, or otherwise interfere with, any gate, structure or other irrigation device under the control of the Service.

10. It is necessary, for the health of the people and for the proper operation of the canals, that the canal water be kept clean. It is forbidden to throw any-

thing into the canals or laterals, and it is expected that all settlers will cooperate in enforcing this regulation.

11. It is the policy of the Reclamation Service to see that all water users are served with water for the irrigation of their lands in accordance with the terms of the water-right application or contract under which they are entitled to water, and to deliver this water at such times and in such quantities as will produce the best possible results for the settlers as a whole, consistent with reasonable economy in the maintenance and operation of the system. It is also the duty of the Reclamation Service to conserve the available water supply to the greatest possible extent in order that the maximum amount of land available may eventually be brought under cultivation. The success of the water users is most earnestly desired and will be furthered in every feasible way. Since the settlers must eventually pay the costs, there should be no question as to their hearty cooperation in all matters affecting the economical and efficient operation and maintenance of the canals and structures. It is expected that every settler will instantly assist in stopping a break or in protecting the structures and will give prompt notice to the superintendent of irrigation or patrolman in case of breaks or threatened danger to any part of the system.

12. The Reclamation Service will, from time to time, issue such instructions as are necessary to carry out these regulations.

F. H. NEWELL,
Director.

Approved, April 24, 1911:

WALTER L. FISHER,
Secretary.

DEPARTMENT OF THE INTERIOR
UNITED STATES RECLAMATION SERVICE

STATE OF WASHINGTON

INSTRUCTIONS

For Water Users and for Employees whose
Duties Pertain to Operation
and Maintenance

APPROVED BY
THE SUPERVISING ENGINEER, WASHINGTON DIVISION,
APRIL 1, 1911

1911

CONTENTS

	Par.	Page
Instructions for water users		
Mutual obligations of Reclamation Service and water users.....	1	10
Special instructions.....	2	11
Sales of water rights for private lands		
Character of title necessary.....	3	11
Residence or occupancy.....	4	11
Area for which water may be obtained	5	11
Public notice and water-right application		
Method of procedure.....	6	12
Payments	7	12
Delivery of water		
Time when charges must be paid.....	8	13
Advance notice of water service.....	9	13
Where water deliveries will be made...	10	13
Penalty for interference.....	11	13
Rights of way		
Right of way of defined width.....	12	14
Erection of fences or other structures..	13	14
Expense of fencing to be borne by land-owners.....	14	15
Right of way of undefined width.....	15	15
Access by agents of the United States..	16	15
Waste or drainage water		
Excessive supply of water.....	17	15
Drainage	18	16
Canal division		
Organization	19	16
Delivery of water.....	20	16
Instructions for employees whose duties pertain to operation and maintenance		
Objects of operation and maintenance department	21	16
Cooperation by employees.....	22	17
Communications, orders and circulars...	23	17

	Par.	Page
Definition of terms used.....	24	17
Duties of patrolmen		
Daily routine.....	25-35	19
Reports by telephone.....	36-38	21
Records and mail reports.....	39-43	22
Daily water record, Form 7-308.....	40	22
Card for requesting delivery or stop- page of water, Form 7-307.....	41	22
Time-sheet and daily force report...	42	23
House diary.....	43	23
Delivery of water.....	44	23
Water supply book.....	45	24
Water measurements.....	46	24
Telephone lines.....	47-54	24
Important causes of trouble.....	47	24
Fuse burning out.....	48	25
Short circuit.....	49-50	25
Broken wire.....	51-52	25
Cooperation with hydrographer.....	55	26
Responsibility for care of government property.....	56	26
Encroachment on government property		
Private structures.....	57	26
Reporting encroachments.....	58	27
Interference with flow of water in irrigation works.....	59	27
Maintenance of canals		
General repairs.....	60	27
Minor or protective repairs.....	61	28
Reporting repairs needed.....	62	28
Authority	63	28
Weeds	64	28
Clear fills.....	65	28
Burrowing animals.....	66	29
Maintenance of laterals and sublaterals	67-72	29

DEPARTMENT OF THE INTERIOR
UNITED STATES RECLAMATION SERVICE
STATE OF WASHINGTON

NORTH YAKIMA, WASHINGTON, April 1, 1911.

INSTRUCTIONS FOR WATER USERS AND FOR
EMPLOYEES WHOSE DUTIES PERTAIN TO
OPERATION AND MAINTENANCE

INSTRUCTIONS FOR WATER USERS

MUTUAL OBLIGATIONS OF RECLAMATION SERVICE AND WATER
USERS

1. It is the first duty of the operation and maintenance department of the Reclamation Service to see that all water users are served with water for the irrigation of their lands in accordance with the terms of the water-right application or contract under which they are entitled to water and to deliver this water at such times and in such quantities as will assure the best result to the water users consistent with a reasonable economy in maintenance and operation of the system. From a broader point of view, however, it is also the duty of the Reclamation Service to conserve the available water supply to the greatest possible extent, in order that the maximum amount of land available may eventually be brought under cultivation. Certain portions of every long-established irrigation project, where lax methods have permitted the excessive use of water, have demonstrated conclusively the evil results of such practice, and every water user should appreciate that in using an excessive amount of water he is not only hindering the greater development of the project as a whole, with the added facilities of better

transportation, better markets, and better home and social advantages which such development will bring, but that he is also producing an inevitable and serious injury to his own lands, and reducing both the quantity and the quality of his crops. On the other hand, it is the duty of the individual water user to utilize to the best possible advantage the water furnished, at such times as it may be found practicable to deliver the same, and to cooperate with the Reclamation Service in every way that may lead to economy and efficiency in use of water, and in the operation and maintenance of the canal system.

SPECIAL INSTRUCTIONS

2. Such special instructions as may be necessary in connection with water delivery or other matters on each project will be promulgated as occasion arises. Information regarding these special instructions will be posted on the bulletin board at the project headquarters and also mailed to each individual water user and to each employee charged with making water deliveries.

SALES OF WATER RIGHTS FOR PRIVATE LANDS

3. *Character of title necessary.* By the terms of the reclamation act the sale of a water right can only be made to the owner of the land, or to one who has initiated a right in the land which will ripen into a fee simple title at or before the time when the last annual payment for the water right is to become due, as, for example, a purchase under contract.

4. *Residence or occupancy.* No sale of water right may be made to any landowner unless he is a bona fide resident upon the land, or an occupant thereof residing within fifty miles.

5. *Area for which water may be obtained.* The number of acres for which water right may be sold to any one landowner is fixed by the Secretary of the Interior, by public notice for each project, or unit of a project,

and in no case can exceed one hundred and sixty (160) acres.

PUBLIC NOTICE AND WATER-RIGHT APPLICATION

6. *Method of procedure.* When water is available for delivery for the irrigation of any land, public notice thereof will be issued by the Secretary of the Interior, pursuant to section 4 of the reclamation act. Each entryman or owner of land within the area covered by such public notice must have subscribed his land in the water users' association, where such association exists, before he can make application for water right; he must then apply to the local land office for a blank form of water-right application, which should be properly filled in, and certified to by the secretary of the water users' association and by the project engineer. The application should then be properly executed by him, and, together with such charges as have been assessed in the public notice and are due and payable, presented to the local land office for acceptance. Upon the presentation to the project engineer, or authorized agent of the Reclamation Service in charge of the delivery of water upon the project, of proper evidence of the acceptance of such water-right application, and the compliance by the applicant with all the requirements in connection therewith, water will be furnished under the instructions hereinafter set forth.

7. *Payments.* Payments for water right under the reclamation act are divided into two classes, as follows: first, building charge, and second, operation and maintenance charge, both of which are payable at the local land office, in the manner designated in the public notice and water-right application. Regardless of the number of annual instalments chosen by the applicant in which to make this payment, which must not be more than ten, he may, upon the reclamation and cultivation of one-half of his irrigable area, pay all deferred charges in full, and secure evidence of a permanent water right.

DELIVERY OF WATER

8. *Time when charges must be paid.* Before water will be delivered in any year, all charges for operation and maintenance which have been levied for that year and prior years must be paid in full, and the laterals, sublaterals, and other conduits through which water is to be conducted to the land, must be in serviceable condition.

9. *Advance notice of water service.* When a water user desires water service, he must give notice, in person, by mail, or through a patrolman, to the project engineer, at least three (3) days in advance of the time when it is desired that water shall be turned either on or off.

10. *Where water deliveries will be made.* Water will be delivered to the water users by an employee of the Reclamation Service, as provided in the various contracts with the water users and water users' associations or by water-right applications, at the weirs or measuring boxes installed for that purpose, upon proper notice, as provided in paragraph 9. Where two or more water users receive water from the same point of delivery, the distribution of the water among the several separately owned tracts must be handled by cooperation among the water users. Water users must not, under any circumstances, interfere with any flume, lateral, division box, check, ditch, or pipe line used for the measurement and distribution of water, or divert water at any place, or in any manner, other than that provided by the Reclamation Service.

11. *Penalty for interference.* The statutes of the State of Washington governing this matter (L. 1909, p. 721) provide as follows:

"Be it enacted by the Legislature of the State of Washington:

Section 1. That any person or persons who shall wilfully interfere with, injure or destroy any dam, dike, headgate, weir,

canal or reservoir, flume or other structure or appliance for the diversion, carriage, storage, apportionment, or measurement of water for irrigation, reclamation, power, or other beneficial uses, or shall wilfully injure or destroy any telegraph, telephone or electric transmission line, or any other property owned, occupied, or controlled by any person, association, or corporation, or by the United States, and used in connection with said beneficial use of water, shall be guilty of a misdemeanor.

Section 2. Any person or persons who shall wilfully or unlawfully take or use water, or conduct the same into his ditch or to his land, or land occupied by him, and for such purposes shall cut, dig, break down or open any headgates, bank, embankment, canal, or reservoir, flume or conduit, or interfere, injure, or destroy any weir, measuring box or other appliance for the apportionment and measurement of water with intent maliciously to injure any person, association, or corporation, or the United States, or for his or her gain, or with intention of stealing or unlawfully taking or causing to run or pour out of such structure or appliance any water for his or her own private benefit or advantage, to the injury of any other person, association or corporation, or the United States, lawfully in use of such water or of such structure or appliance, shall be guilty of a misdemeanor.

Section 3. The use of water through such structure or structures, appliance or appliances hereinbefore named after its or their having been interfered with, injured or destroyed, shall be *prima facie* evidence of the guilt of the person so using it.

Section 4. Any person or persons convicted of committing any of the misdemeanors herein specified, or of any of said offences, shall be fined not less than twenty-five dollars, nor more than one hundred dollars, or be imprisoned in the county jail not exceeding six months, or both, in the discretion of the court.

RIGHTS OF WAY

12. *Right of way of defined width.* A defined right of way for canals, laterals, and sublaterals having a capacity of ten cubic feet per second, or over, has been acquired by the United States. This right of way is of varying widths, and is shown on a map on file in the office of the project engineer.

13. *Erection of fences or other structures.* No fences, or structures of any kind, shall be built on, or across

any canal, lateral, or sublateral having a capacity of ten or more cubic feet per second or over the right of way thereof, and no structure or other obstruction of any kind maintained thereon, except under written contract or license granted by the project engineer.

14. *Expense of fencing to be borne by landowners.* Fencing of right of way along canals, laterals, or sublaterals having a capacity of ten or more cubic feet per second, will be at the discretion and expense of abutting landowners. Should the landowners desire to fence the right of way along any such canal or lateral, they may have the right of way limits staked out for them by the Reclamation Service, by making application to the proper officer.

15. *Right of way of undefined width.* The United States under various contracts and legal rights has acquired rights of way for all canals, laterals, and sublaterals, of whatever size. For canals, laterals, and sublaterals having a capacity of less than ten cubic feet per second, only so much right of way is claimed as is necessary for the proper operation and maintenance of such canals, laterals, or sublaterals. As this is usually small, the width of this right of way has not been defined.

16. *Access by agents of the United States.* The duly authorized agent of the United States shall at all times have access to and egress from the right of way for such canals, laterals, or sublaterals, and no fence or other obstruction shall be built in such way as to interfere with reasonable operation thereof, or obstruct the flow of water therein. Where fences are constructed across such laterals or sublaterals proper gates must be installed if requested by the project engineer.

WASTE OR DRAINAGE WATER

17. *Excessive supply of water.* Beneficial use of water being the basis of all Government water rights,

the wasteful use of water is prohibited. Existence of waste water will be considered evidence of excessive supply.

18. *Drainage.* The water user shall be individually responsible for drainage water from his particular lands. No such drainage water shall be turned into the canals, wasteways, or laterals of the Reclamation Service, directly or indirectly, except upon written permission or license from the project engineer.

CANAL DIVISION

19. *Organization.* If at any time water users desire to take advantage of the provisions of the by-laws of the water users' association regarding canal divisions, for the purpose of taking over the operation and maintenance of portions of the lateral and sublateral system now operated and maintained by the Reclamation Service, they should submit, through the water users' association, for approval of the project engineer, the boundaries of such division and the proposed plan of operation thereof.

20. *Delivery of water.* The Reclamation Service will, upon the making of a proper contract relative thereto, deliver at the head of the distributing system supplying water for said canal division, the water therefor, to be distributed by the authorized agent of the canal division, in accordance with the said provisions and the instructions hereby established, or which may hereafter be established therefor.

INSTRUCTIONS FOR EMPLOYEES WHOSE DUTIES PERTAIN TO OPERATION AND MAINTENANCE

21. *Objects of operation and maintenance department.* The department of operation and maintenance has for its principal objects the delivery of water to the various water users according to their water-right application or contracts, the maintenance of the canal

and lateral systems up to the point of highest efficiency, the development and improvement of such methods of operation and distribution of water as will lead to a saving in the amount of water necessary to be diverted at each lateral, and the prevention, so far as possible, of the wasteful use of water, over-irrigation, and the resultant evils of water-logged and alkali lands.

22. *Cooperation by employees.* It is necessary, in order to obtain these results, that every employee enter into his work with a spirit of hearty cooperation, and throughout his service keep these objects clearly in mind. Any suggestions from the patrolmen, or other employees, leading to a betterment of the service, will be gladly received, and if found practicable, will be adopted. Detailed instructions and orders for the guidance of this department will be issued from time to time from the office of the project engineer, and it is expected that they will be obeyed to the letter. Successful operation is impossible unless such instructions are promptly obeyed, and it is hardly necessary to add that failure in this respect means prompt dismissal from the service.

23. *Communications, orders and circulars.* All communications and operating circulars issued by the project engineer, or the superintendent of irrigation, must be acknowledged by letter as soon as received, and in case there is not a clear understanding of the same, further explanation should be requested. All written orders and circulars should be filed for future reference and guidance in the work. As nearly as possible each circular will be confined to one subject. It will be advisable for the patrolman to read over the circulars and instructions from time to time, in order to keep them at all times fresh in his mind.

24. *Definition of terms used.* When the following terms occur in the text, the definition here given is to be assumed:

Canal. The principal arteries or conduits of an irri-

gation system, including the main canal and principal branches.

Lateral. Any irrigation conduit which branches from the canal.

Sublateral. Any irrigation conduit which branches from a lateral, and including all its branches and divisions down to the point of delivery.

Operation. That part of the process of using an irrigation system which consists of the collection, transmission and delivery of water. To this account the following should be charged:

- (a) The necessary expense of operation.
- (b) The expense of patrolling, and other work necessary to prevent damage to the system from any cause whatever.
- (c) The expense of such repairs during the irrigation season as are incident to the operation of the irrigation system and necessary to insure the continuous delivery of water.
- (d) Labor cost of all repairs, of whatever nature, made during the irrigation season by regular operating employees.

Maintenance. That part of the process of using an irrigation system which consists of keeping the same up to a fair standard of excellence. To this account the following should be charged:

- (a) The expense of all repairs during the non-irrigation season, and all repairs during the irrigation season not incident to and made necessary by the operation of the irrigation system.
- (b) The expense of cleaning canals, laterals, and sublaterals, cutting weeds, etc.
- (c) The expense of all new work necessary to replace worn out parts of the system.
- (d) The expense of improving parts of the present system for the benefit of operation, not chargeable to construction.

Superintendent of irrigation. The officer in personal supervision of the operation and maintenance of an irrigation system.

Beat. That portion of an irrigation system under the personal charge of a patrolman or ditch rider.

Patrolman. The person employed by the Reclamation Service, or the canal division, to ride or patrol the ditch or to tend the gates—sometimes called ditch rider, ditch tender, or gate tender—and who is in immediate charge of some designated portion of the irrigation works.

DUTIES OF PATROLMEN

DAILY ROUTINE

25. Patrolmen will report to headquarters at 6:30 o'clock a. m. every day by telephone, and when on field duty, from each telephone along their route. They shall start to work at 7 o'clock a. m., carrying a shovel, at least four sacks, report cards, and a water-supply book, and other tools and material when necessary.

26. A good saddle horse, trained to stand, should be used, or, when authorized, a horse and light buggy, in order to carry other tools or material. Each patrolman will provide his own horse and horse feed, and necessary personal equipment. Tools and material will be furnished by the Reclamation Service.

27. The first duty of a patrolman is to ride such portions of the canal as are included in his beat. He must find out by careful examination that this portion of the canal is safe before taking up the other work of the day. He must feel that the responsibility for the safety of this portion of the system rests entirely upon him, and let the patrol of his beat take precedence over all other work, excepting only an emergency that requires prompt attention to prevent accident. Every fill requires careful watching and examination, especially at

times when additional water is turned into the canal, thereby raising the water level upon the banks. A careful examination should be made at such times just above the water line on all fills, in order to discover rat or gopher holes, cracks, or crevices, which if not repaired or puddled might become the cause of a serious break.

28. All structures along the route must be inspected, and if repairs are needed which cannot be made by the patrolman, detailed notes should be taken of what is needed, and report made to the proper official at the first opportunity.

29. Weeds and other floating debris should be kept out of the ditches. The small pipe intakes require particular watching when there are weeds in the ditches.

30. While riding the canal on his beat, the patrolman will read and record the gage height, and the time of reading, at each outlet and canal gage, and will regulate the flow of water at each point in accordance with the requirements. Where it is necessary to change the quantity of water flowing in canals or laterals, readings must be taken both before and after regulating.

31. The patrolman will be expected to put in as many hours each day as may be necessary for the successful prosecution of his work, and be ready to respond to emergency calls at any hour of the day or night.

32. After the canal is patrolled, whatever time is necessary should be used in regulating individual deliveries to the water users on the beat, in accordance with instructions hereinafter contained.

33. When not engaged in patrolling the canal or delivering water, the patrolman should make use of his time by cleaning fills and making small repairs on canals and laterals in his district, removing weeds or drift from canals, cleaning out pools above head weirs, etc. When weeds or other like material are removed

from canals, they should be disposed of in such manner that they cannot be again blown into the ditch, or elsewhere, to cause further trouble. In burning weeds great care should be taken to prevent damage to property of farmers, or to canal structures, fences, or telephone poles.

34. The patrolman should poison, drown, trap, or otherwise destroy gophers, sage rats, or other burrowing animals that injure the canal banks. A sharp lookout should be kept for muskrats in the canal. Their presence should be reported, and they should be killed whenever possible. All fills should be kept clean of weeds, willows, or brush, to facilitate the discovery of rat holes, seepage, leaks, or other evidence of weakness in the fills.

35. The patrolman will be held responsible for the safety and the proper operation and maintenance of the canals and laterals on his beat. The main canal should always be first in mind, and no effort should be spared to insure its safety day or night. People along the canal should be urged to respond promptly to calls for help in case of emergency, and to give alarm at once in case of a break. Breaks or other accidents beyond the control of the patrolman, should be reported at once to the project headquarters, also to the watermaster, should there be one.

REPORTS BY TELEPHONE

36. The patrolman will report to headquarters by telephone at 6:30 o'clock a. m. He will give the gage and time readings at his stations, and receive at the same time any special instructions for the day.

37. Upon arriving at the end of his beat, the patrolman will by telephone report to headquarters the reading of each gage on canals, and at all outlets, giving time each gage was read.

38. Great care must be used in making these readings and reporting them correctly, as the proper distribution

of water and the operation of the canal depend upon having an accurate and complete daily record of the water in all parts of the irrigation system.

RECORDS AND MAIL REPORTS

39. The patrolman will be furnished all report and record blanks necessary for his use, which in general are as follows:

40. *Daily water record, Form 7-308.* This form is the most important record in connection with operation and maintenance work, and should be filled out by the patrolman or other person in charge of the delivery or measurement of water. It contains all the essential information upon which other records are based, and the greatest care must be used to correctly gather and enter the information required. It must be filled out daily as the work progresses, *all* gage height readings being entered in the proper column as the gages are read, together with the number of the structure, number or name of canal, lateral, etc., with any additional information necessary to identify the structure at which the reading was taken. These cards should also show each individual water delivery visited by the patrolman during the day. It is expected that the patrolman will visit every delivery on his beat at least once a month, and as much oftener as possible. These cards should also be used to report all complaints of water users, and requests to have water turned on or off, together with action taken in each case. All information should be entered in the proper column *as it is gathered*, and should never be left until the day's work is done. When the day's record is complete, the cards should be forwarded by mail to the superintendent of irrigation.

41. *Card for requesting delivery or stoppage of water, Form 7-307.* A supply of these cards should always be carried by the patrolman on his beat for the convenience of the water users. When a water user requests

that water be turned on, or off, or the amount of delivery changed, he should fill out one of these cards, and it should then be mailed to the superintendent of irrigation.

42. *Time sheet and daily force report.* This blank will be used to record the patrolman's time, and that of any employee working under his direction, and should be mailed weekly to the superintendent of irrigation. For fractional weeks at the end of a month, they should be mailed on the last day of the month. Especial care should be taken whenever it is necessary to use account numbers, to see that correct numbers are used, and that proper distinction is made between charges to maintenance and to operation. When in doubt as to the proper number to use, advice should be obtained from headquarters. Do not use operation account numbers during the non-irrigation season.

43. *House diary.* The patrolman will be furnished a diary, in which he will keep a record of gage heights in the canals, the time of reading same, and a record of any extraordinary changes in the gage heights, with reasons therefor, if they are known. Complaints, or other matters of importance, which were entered on the daily water record cards, should be recorded in greater detail in the house diary.

Any complaints or other matters which cannot be adjusted by the patrolman within the authority given him under his regular instructions, should be reported by him to the superintendent of irrigation. Suitable record should be made of the instructions received from the superintendent of irrigation, and of the final action taken in each case. No effort should be spared to have the records contain *all data* that may be of use to the Service, and to keep them in a neat and legible manner.

DELIVERY OF WATER

44. One of the most important functions of the patrolman is the delivery of water to the various water

users in accordance with the contract obligations of the Reclamation Service. This must be done at all times in a just and impartial manner, and in exact accordance with instructions received.

It is the earnest desire of the Reclamation Service to further in every possible way the success of the individual water user and the highest development of the lands under the project. It is also absolutely essential to conserve to the greatest degree the available water supply.

WATER SUPPLY BOOK

45. Each patrolman will be furnished with a water supply book, which will contain the names of all water users, and a description of their lands, with full information as to the amount of water to be delivered to each.

The instructions contained in the water supply book must be followed in every detail, and must never be deviated from without written instructions from the superintendent of irrigation.

Water users are entitled to know at any time the basis upon which their water is being delivered, and when such information is requested, it should be cheerfully furnished by the patrolman from his water supply book.

WATER MEASUREMENTS

46. It is extremely important that all gage readings and water measurements are properly made and correctly reported. It is also essential, in order that the reports may be of use, that all weirs, measuring boxes, or other measuring devices, shall be kept in such condition that the quantities actually delivered will agree closely with the quantities computed from the gage readings.

TELEPHONE LINES

47. *Important causes of trouble.* When trouble occurs on the telephone system, prompt action should

be taken to have it repaired. This will shorten the periods when the lines cannot be used. Three important causes of trouble on telephone lines are burning out, or breaking of wires in fuse blocks; short circuit of line; and breaking of wire.

48. *Fuse burning out.* The two little strips of mica with a fine wire in the mica are the fuses intended to protect the instrument from damage by lightning or heavy currents. When the lines are struck by lightning these fine wires melt and break the circuit. Each instrument will be supplied with a few extra fuses which can be used to replace those burned out.

49. *Short circuit.* When two wires on the telephone line touch it short circuits the line so that it is impossible to ring any station, though it is often possible to hear a conversation going on over the line. When wires are discovered touching, they should be separated, and fixed so that they cannot touch again.

50. If the generator works harder than usual, it is a pretty good sign that there is a short circuit on the line. It is not likely that any one could be called in such case, but the effort should be made nevertheless. In case it is not possible to obtain another station, the beat should be immediately patrolled in search of the short circuit.

51. *Broken wire.* When the generator on the telephone turns very easily it is an evidence of a break in the line. When this occurs, an attempt should be made to call the next station above and below, in order to locate the break. If the next station cannot be raised, those farther above and below should be tried. If no answer can be obtained, it is pretty sure that the break in the line is on the beat where the telephone is located. The line should be immediately traced above and below the station where the trouble is until the break is located. If not found on this beat, the next patrolman should be notified, and he should patrol his beat.

52. In case of a broken wire on the circuit, the two

pieces should be connected with baling wire, or any other kind obtainable. The ends of the wires should be scraped, to make good contact. The wires should be fastened to the poles in such way that the wires do not touch each other or the ground. After this temporary repair is made, the headquarters office should be immediately notified.

53. If a patrolman is not called by the headquarters office at least once a day, he should call up that office to be sure that the telephone is in working order. The receiver should never be left off the hook. If necessary to leave the instrument, the receiver should be hung up instead of being laid down.

54. These instructions must be followed carefully by each man on the line, and it will seldom happen that the system will be out of service for more than an hour or two.

COOPERATION WITH HYDROGRAPHER

55. The patrolman must at all times render all possible assistance to the hydrographer consistent with the safety of his beat. The work of the hydrographer is of the utmost importance to the successful operation of the canal, and the accuracy of his results depends to a large degree upon the proper handling of the flashboards and other regulating works by the patrolman.

RESPONSIBILITY FOR CARE OF GOVERNMENT PROPERTY

56. Each patrolman will be held responsible for the proper care of all tools and equipment and other Government property under his supervision. This applies especially to the patrol houses and grounds, which have been provided at considerable expense, and which should be kept neat and attractive in appearance by the patrolmen who have the use of them.

ENCROACHMENT ON GOVERNMENT PROPERTY

57. *Private structures.* Patrolmen and other employees should not allow any private structure to be

placed upon property belonging to the United States, except on the presentation of written permission or license, signed by the proper officer.

58. *Reporting encroachments.* It is the duty of patrolman, or of any other employee of the operating department, to report promptly to the superintendent of irrigation whenever it is found that any person is in any way encroaching upon Government property, as by the building of fences or flumes on rights of way which should be kept open, the building of bridges or other structures across canals or laterals, the building of telephone lines or power transmission lines on or across Government rights of way or where the same might interfere with the operation of the Reclamation Service telephone line, the building of any structure whatsoever upon Government property, or of any other trespass. Any such encroachment must be reported promptly, even though the trespassers claim to have proper permit from the Reclamation Service.

59. *Interference with flow of water in irrigation works.* Any interference in any way with the flow of water in any of the irrigation works which are operated by the Reclamation Service should be reported promptly to the superintendent of irrigation. This applies not only to malicious or mischievous interference and to unlawful appropriation of water, but to such cases as the turning back of water into the canals, laterals, or sublaterals without notice to the proper officer. This latter practice is the cause of a great deal of trouble, especially toward the end of the irrigation season, creating, as it does, a surplus of water at the lower end of the system, resulting in excessive waste water, and often in serious damage to irrigation works, crops, and property of water users at the lower end of the laterals.

MAINTENANCE OF CANALS

60. *General repairs.* The larger part of the work necessary to repair the canal and that part of the lat-

eral system which the Government is obligated to keep in good condition is usually carried on by crews organized for this purpose after the water is turned out of the canal in the fall, and completed between the close of one irrigation season and the opening of another.

61. *Minor or protective repairs.* The minor repairs necessary during the irrigation season, when the water is in the canal, are usually made by the patrolman, and if not too great in magnitude are considered part of his regular duties.

62. *Reporting repairs needed.* It is the duty of each patrolman to report at once to the superintendent of irrigation the discovery of any weak places, giving a full and complete description of the situation, and his opinion of what work appears necessary to safeguard it.

63. *Authority.* In general the patrolman will not be authorized to employ men or teams for any work, without first obtaining such authority from the superintendent of irrigation. This order, however, does not apply to emergency cases where prompt work is required, as, for instance to prevent a break, or a serious injury to any part of the Government property. In such cases the patrolman is authorized and directed to employ such force and to do such work as in his judgment may be immediately required. In any case, however, the employment of such additional force must be reported at once to the superintendent of irrigation.

64. *Weeds.* All thistles, tumble weeds, and other vegetable growth which can be readily burned, must be destroyed by fire in the early months of the irrigation season.

65. *Clear fills.* It is important that all fills be kept free from vegetable growth, such as thistles, tumble weeds, willows, etc., throughout the entire length of the canals and the main laterals. If the banks of fills are kept free and not covered by vegetable growth, a better opportunity is afforded the patrolman to discover weak places, seepage conditions, or incipient breaks.

66. *Burrowing animals.* The patrolman is expected to pay especial attention to ridding the banks of the canals and laterals throughout his beat, of all burrowing animals, including muskrats, and he will be furnished with the proper means of extermination, with full information on the subject.

MAINTENANCE OF LATERALS AND SUBLATERALS

67. The policy of the Reclamation Service in this district in regard to the maintenance of canals, laterals, and sublaterals, may be stated in general as follows:

68. Where canal divisions have been organized, the maintenance of the canals, laterals, and sublaterals, and all other irrigation works within the boundaries of the canal division, will be defined by contract with the water users' association creating such canal divisions.

69. Where canal divisions have not been organized, the Reclamation Service will maintain and keep in repair all canals, laterals, and sublaterals, which have a carrying capacity of ten cubic feet per second and over, and the farmers or water users will be obligated to maintain and keep in order all canals, laterals, and sublaterals having a capacity of less than ten cubic feet per second.

70. All the canals, laterals, and sublaterals on each beat or canal division must be inspected before the beginning of each irrigation season, and should it be found that any portion of the system is not in proper condition for successful operation, report in detail covering the matter and making recommendations as to work to be done, must be made to the superintendent of irrigation at least one month prior to the beginning of the irrigation season.

71. Water must not be turned into any canal or sub-lateral until the same is cleaned out, repaired, and placed in a serviceable condition to deliver water, and the gates to the turnouts or headings of such canals,

laterals, and sublaterals must be kept securely locked until the work has been performed in a manner satisfactory to the Reclamation Service.

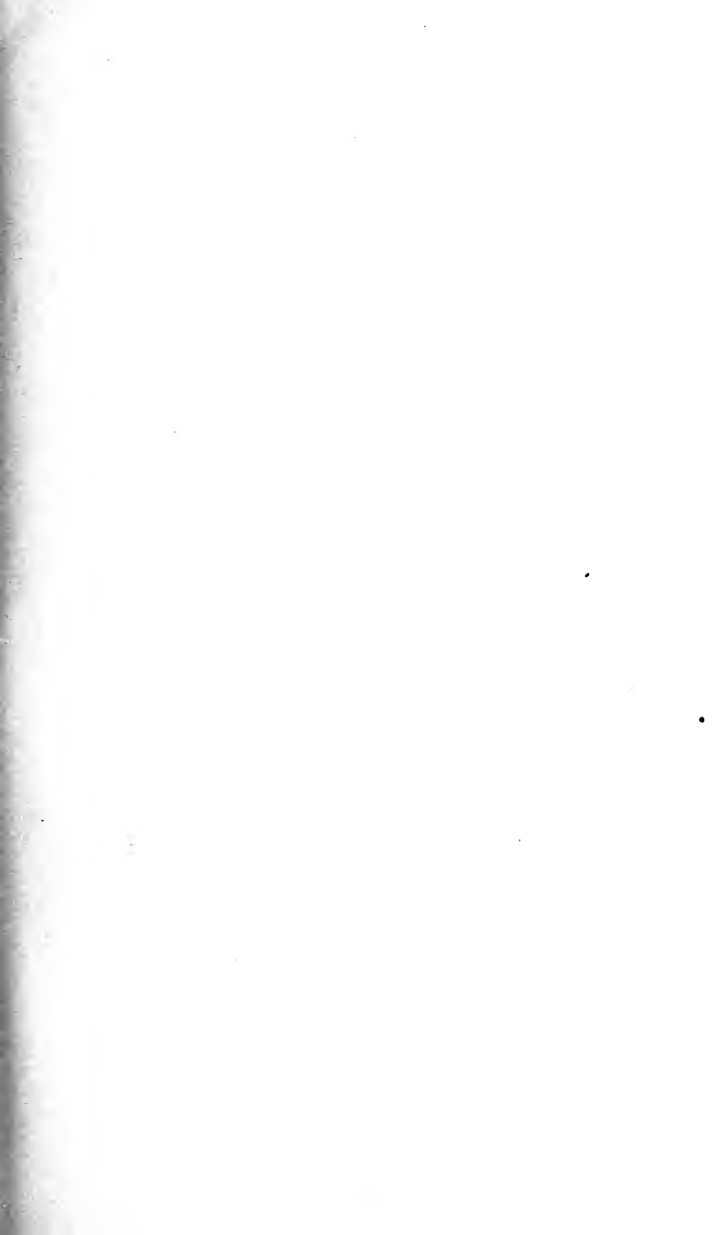
If at any time during the irrigation season the patrolman finds any canal, lateral, or sublateral becoming unfit for operation on account of silting up, growth of weeds, or any other cause, it shall be his duty to report the same in writing to the superintendent of irrigation, stating what in his opinion should be done to remedy the matter. Upon receipt of such report the superintendent of irrigation will take the necessary steps to put the works reported on in the proper condition. If the works are maintained by the Reclamation Service and it is necessary to stop delivery of water in order to make repairs, advance notice will be sent to each water user, stating date water will be turned off, and approximate length of time. If the works are maintained by the canal division or the water users' association, notice will be sent to the proper parties to the effect that if the works are not put in satisfactory condition by a stated time, water will be turned off until attended to.

72. The patrolman is especially instructed to see that all works are put in serviceable condition and kept so throughout the season, that they may be easily regulated and a satisfactory delivery of water maintained, for it must be distinctly understood that the Reclamation Service will not undertake to operate a canal, lateral, or sublateral that is filled with silt, or grown up with weeds, willows, or other growths that impede the free flow of water.

Approved, April 1, 1911:

C. H. SWIGART,

Supervising Engineer.





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